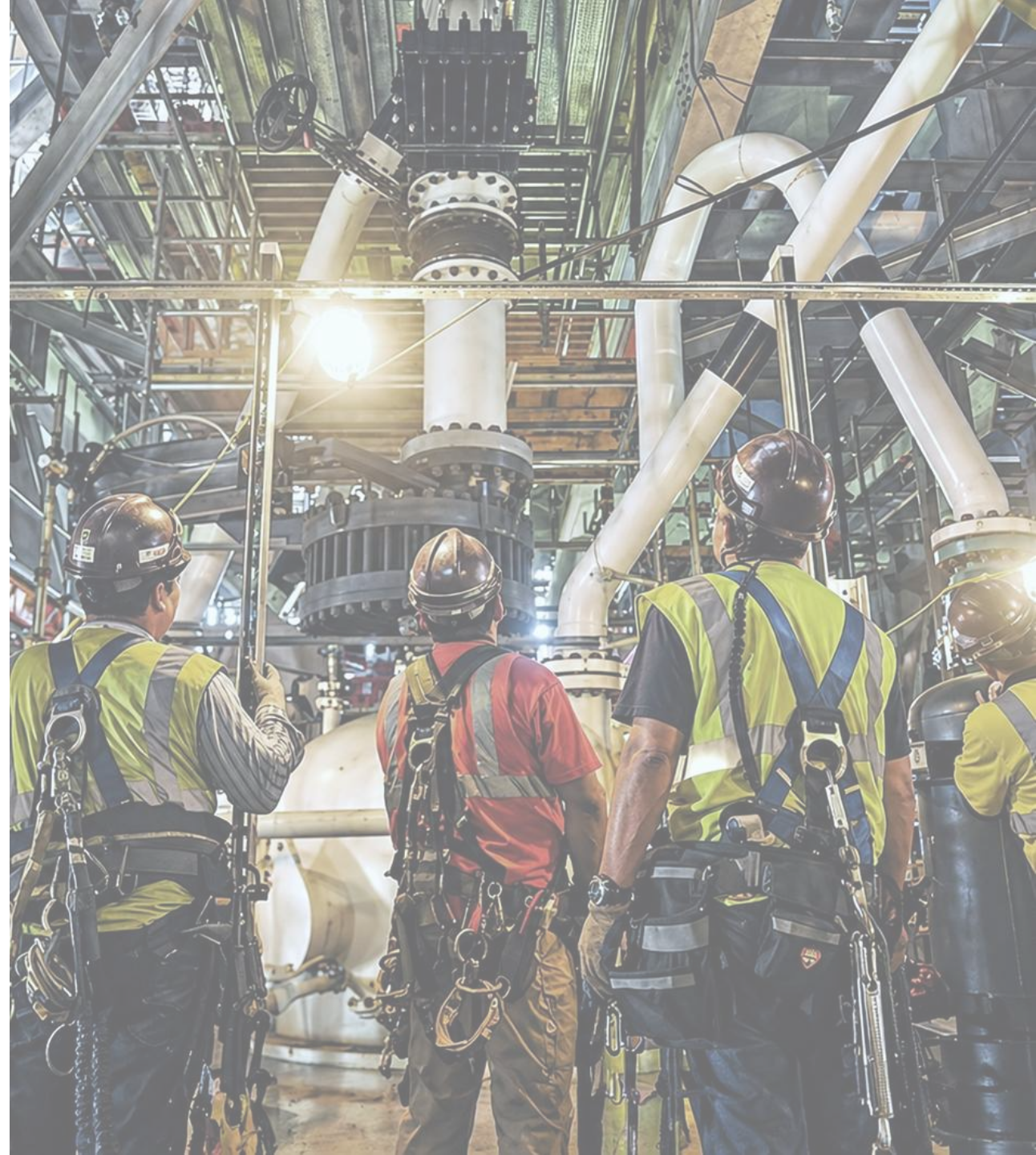


Coal Gasification in India: An Introduction to TRIG™

Introduction Document



- 1. Introduction to Latitude Energy**
- 2. Latitude Energy's differentiated value proposition**
 - TRIG™ technology: Introduction, key benefits, and deployment**
 - End-to-end solution suite with defined implementation roadmap**

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1. Introduction to Latitude Energy



Latitude Energy is an energy transition firm built around a simple premise

“The world will continue to rely on domestic carbon resources, but those resources need to be used more efficiently, strategically, and responsibly”

Our Beginning

Latitude’s founding transaction was the **acquisition of industrial rights to TRIG™**, a **U.S.-developed gasification platform**, providing the foundation for a broader suite of gasification and oxy-combustion technologies.

Our Value Proposition

Latitude’s platforms help **convert coal, plastic waste, biomass, and municipal solid waste into chemicals, fertilizer, transportation fuels, hydrogen, and near-zero-emissions power.**

Latitude works to reposition legacy carbon assets as lower-emissions industrial infrastructure supporting energy security, supply-chain resilience, and practical decarbonization.



Advanced Gasification

Patented gasification systems transform coal and biomass into syngas for chemicals, fertilizer, hydrogen, and low carbon fuels



Power Solutions

Reliable, efficient solid-fuel power with near-zero emissions

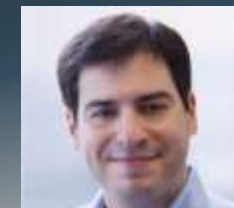
Executive Team



Jacob Thomas
CEO



Josh Satterfield
CSO



Geoffrey Dubin
CDO



Kerry Bowers
COO



Frank Morton
CTO



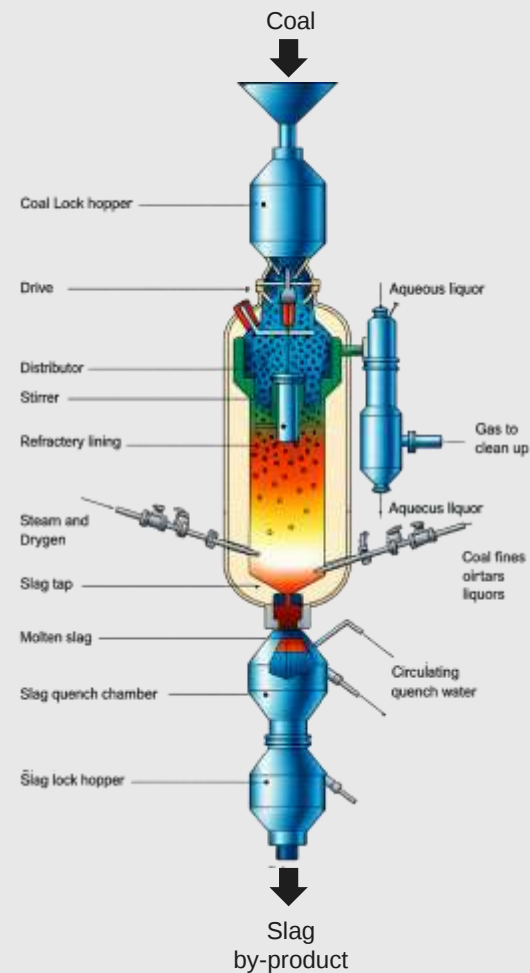
Brandon Davis
Technical Lead

We develop, license, build, and manage projects around the world

1. Introduction to Latitude Energy
2. **Latitude Energy's differentiated value proposition**
 - **TRIG™ technology: Introduction, key benefits, and deployment**
 - End-to-end solution suite with defined implementation roadmap

TRIG™ technology – Simple gasification system developed to avoid common issues faced by conventional gasification system

TRIG™ advantage over conventional gasification system



COMPLEX

Conventional Gasification System Common Issues

Burners with “Flame Zone” and
moving parts

Refractory management

Slag handling

Black water treatment

Availability philosophy varies by
design; some conventional
gasifiers rely on spare trains for
planned/unplanned outages

SIMPLE

Advantage of TRIG™ Gasification System

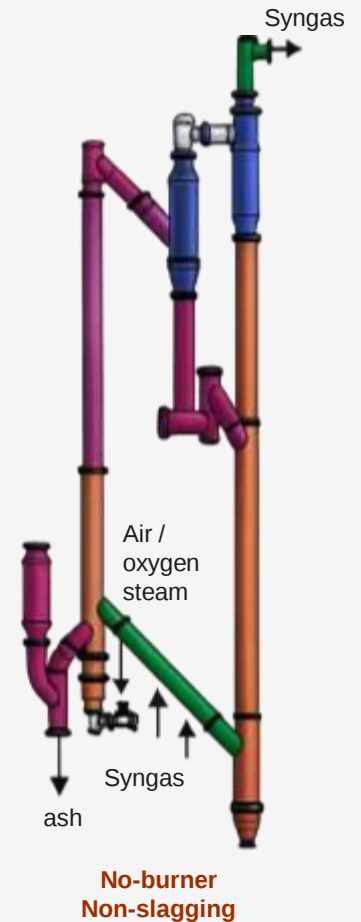
No burner, therefore, No “Flame
Zone” and No moving parts

Dry feed

No slag / black water

High-ash compatible

Large single-train design basis;
spare-train philosophy defined in
FEED based on operational uptime
and cost efficiency



TRIG™ technology key features – Optimized gasification for low-rank coal; potential delivered-cost pathway, subject to feasibility

TRIG™ design enables reliable low-cost operation through dry, non-slagging gasification

1

Optimal gasification temperatures

Gasification temp. optimized for reactivity of low rank coal (~950°C) while achieving high carbon conversion

- Temperatures **higher than fixed bed gasifiers** → **higher syngas yields** (more syngas per tn of coal) **without** syngas tar/oil cleanup **expense**
- Lower temperatures than **slagging gasifiers** → ash does not form molten slag, avoiding energy penalty & slag removal challenges
- **Avoids slag tap** and slag-handling systems and their environmental costs
- **Reduces high-temperature refractory wear**, supporting **longer refractory life**
- **Limits metal vaporization risk** compared with very high-temperature slagging gasifiers

2

Dry Coal Feed

TRIG™ uses a **pressurized dry-coal feed system** that **supports higher operational uptime** by avoiding common operating issues associated with slurry-fed gasification systems. Able to handle Dry coal feed with high moisture vs. slagging gasifier dry coal feed requirement of <5% - significantly reducing energy consumption.

- **Eliminates slurry-feed related handling and reliability challenges**
- Supports more **stable gasifier operation and higher availability**
- **Avoids the water / slurry burden** associated with wet-feed systems
- TRIG™'s PDAC dry-feed system is a distinctive and reliable feature (close to 100% uptime)

3

Dry Ash Removal

Combines **candle-filter particulate removal** with **dry ash depressurization systems** designed to remove filtered ash reliably from pressure vessels **without moving parts**

- Candle filters **reduce particulate matter in syngas to non-detectable levels**
- CFAD and CCAD systems remove bulk filtered ash through dry depressurization, **avoiding molten ash handling and associated environmental challenges**
- No-moving-parts ash removal helps **address reliability challenge** in pressurized fine-particulate removal
- Demonstrated high uptime of CFAD and CCAD systems for **higher operation reliability**

Higher syngas yield, lower energy consumption and less syngas treatment are the design intent; potential delivered-cost advantage to be tested against product-specific import parity

Product Flexibility: ~14,700 MT/day sub-bituminous coal feed (~4,200 kcal / kg)

1.4 MTPA
DME

2.0 MTPA
Methanol

2.4 MTPA
Ammonia

4.2 MTPA
Urea

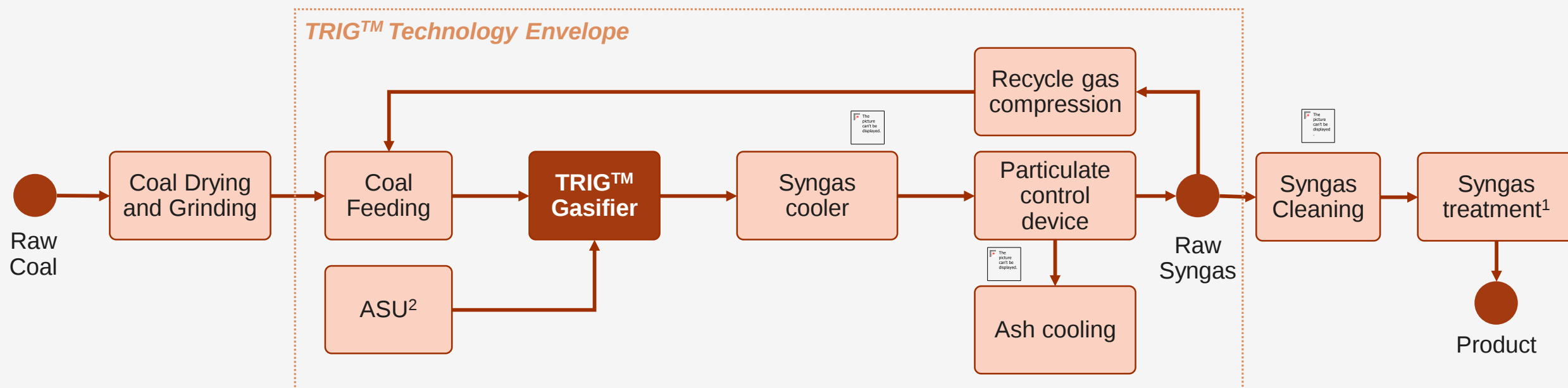
1,000 MCM/yr
SNG

4,200 mcm/yr
Hydrogen

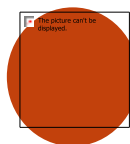
Deep Dive on TRIG™ technology – Key advantages: Low rank coal feedstock, Energy Efficiency, Low environmental footprint, and reliable operation

TRIG™ high-level process

- Steam
(recycled for internal plant use (e.g., power generation, process heating etc.))

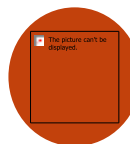


1 Feedstock Advantage



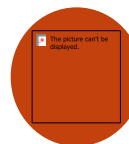
- Capable of handling low rank coal
- High single train capacity

2 High Energy Efficiency



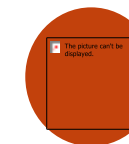
- No fine grinding
- Less/ no extra drying
- Generates HP process steam
- Less Raw Syngas clean-up

3 Low Environmental Footprint



- Dry feed eliminates slurry feed water treatment
- Candle filter removes particulates from syngas
- Dry ash removal removes gray water from slag quench systems.

4 Reliable Operation



- No burner wear
- No moving parts in feed systems, gasifier or ash removal systems.
- Mild temperatures extend refractory life.

Proven track record for addressing a feedstock range not well-served by other commercial gasifiers

Indicative comparison of available large-scale gasification platforms

	Western Entrained-Flow <u>Entrained-flow gasifiers</u>	Crushed Coal Pressurized Gasification (Lurgi) <u>Fixed / moving-bed gasifiers</u>	Chinese Platforms ECUST OMB, Tsinghua OSG <u>Entrained-flow platforms</u>	TRIG™ <u>Fluidized-bed gasifier</u>
 Syngas Quality	Syngas quality varies with coal; feedstock-dependent ; However, dependent on coal feedstock	Lower quality syngas ; contains tars, phenols, and higher hydrocarbons requiring extensive downstream cleanup	High quality ; However, dependent on coal feedstock	 High-quality syngas ; particulate filtration and downstream cleanup
 Coal Type	High-rank bituminous coal ; low-rank coal require higher mass throughput and adaptation	Designed for crushed lignite-subbituminous coal (~6-50 mm); less suited to fine coal or high ash without pre-treatment	Optimised for Chinese bituminous feedstocks per vendor references	 Developed specifically for sub-bituminous, lignite, and high-ash coal
 Efficiency	Low efficiency when using low-rank coal due to slurry water, slagging requirements and higher feed throughput	Low efficiency ; high methane content and tar/phenol byproduct streams require additional processing for chemical synthesis	Medium efficiency ; works best when feedstock is intended Chinese bituminous-coal	 High energy-efficiency ; partial drying, no fine grinding, HP steam recovery, smaller raw syngas clean-up load
 Capacity	Medium capacity ; dependent on low-rank coal can require higher mass throughput and adaptation	High capacity ; 3,000 to 4,200 m ³ of raw gas per hour per m ² of generator cross-section	High capacity ; up to ~4,000 t/day single-furnace coal processing	 High single-train capacity ; ~5,000 t/day single-gasifier basis and commercial-scale Kemper reference
 Technical validation	Limited references on low-rank, high-moisture lignite applications	Limited references on low-rank, high-moisture lignite applications	Performance gap on lignite without significant adaptation	 Details next Commercial scale utilizing low rank coal proven technology at Kemper facility
 CAPEX	Higher CAPEX burden for low-rank coal applications.	Higher CAPEX due to cleaning syngas due to heavy contamination	Competitive if China-localized supply chains.	 Expected lower capex on low-rank/high-ash coal; India-specific (indicative; India capex confirmed in feasibility)
	Less suited to low-rank coal	Issues with syngas quality & byproducts	Reference base is Chinese bituminous feedstocks	Designed for low-rank coal

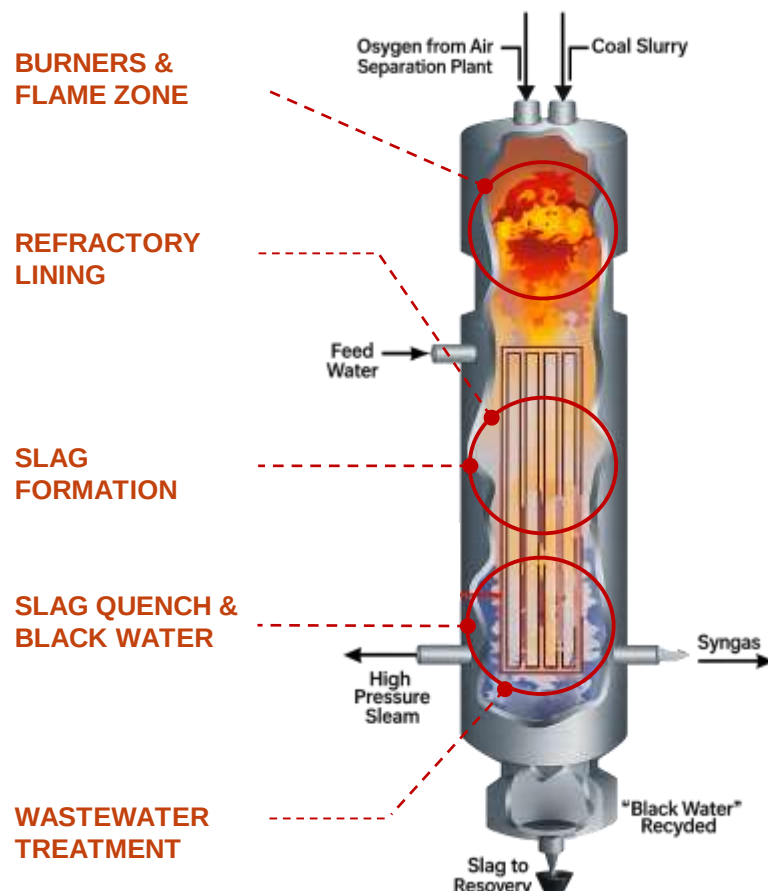
TRIG™
successfully
advanced from
pilot testing to
commercial-scale
operation at
Kemper IGCC



Kemper County IGCC

Understanding the TRIG™ advantage starts with understanding the pain points of conventional gasifier system

TYPICAL CONVENTIONAL GASIFIER



Conventional gasifiers typically require spare gasifiers due to low individual unit uptime (~40% uptime due to slagging)

PAIN POINTS OF CONVENTIONAL GASIFIER

Burners & Flame Zone

- High temperatures ($>1,300^{\circ}\text{C}$) create **severe thermal stress**, **accelerating equipment wear** and increasing maintenance requirements
- **Burners are maintenance-intensive and prone to failure**, resulting in unplanned downtime and reduced availability

Refractory Lining

- Refractory exposure to extreme temperatures and thermal cycling leads to erosion, cracking, and frequent relining requirements
- **Refractory degradation can force shutdowns, reducing operating uptime and increasing maintenance costs**

Slag Formation

- Ash melts into molten slag, **causing accretion, plugging, and refractory damage within the gasifier**
- Slag buildup can **disrupt operations and increase maintenance intervention frequency**

Slag Quench & Black Water

- Molten slag requires water quenching, **generating contaminated black water streams that require handling and treatment**
- Additional quench and water management systems **increase process complexity and operating costs**

Wastewater Treatment

- Black water treatment requires dedicated infrastructure, **increasing capital and operating expenditures.**
- Wastewater treatment **adds environmental compliance requirements and operational burden.**

Overall Impact

- Higher CAPEX and OPEX
- Lower reliability and availability
- Lower plant uptime

TRIG™ AVOIDS SUCH PAIN POINT

No Burner. No Flame Zone.

- No moving parts, Lower operating temperature ($\sim 750\text{--}900^{\circ}\text{C}$)

Reduced Refractory Stress

- Lower thermal stress extends refractory life

No Slagging Operation

- Dry ash operations, no slag, no plugging

No Slag Quench. No Black Water.

- Dry ash removal only, no contaminated water stream

No Black Water Treatment

- No wastewater treatment leads to lower operating cost and environmental risk

Simpler. Higher Reliability.

- Lower CAPEX due to design simplicity; Higher availability and uptime due to no moving parts

TRIG™ technology – Simple gasification system developed to avoid common issues faced by conventional gasification system

TRIG™ advantage over conventional gasification system



1 Optimal gasification temperatures

TRIG™ operates at a **gasification temperature optimized for the reactivity of low rank coal (~950°C)** while achieving **>99% carbon conversion**

- Operates at temperatures **higher than fixed bed gasifiers** so it produces **higher syngas yields** without the expense of syngas tar/oil cleanup; **reduces high-temperature refractory wear**, supporting **longer refractory life**
- Operates at temperatures lower than **slagging gasifiers**, so ash does not form molten slag, avoiding energy penalty and slag removal challenges; **Avoids slag tap** and slag-handling systems and their environmental costs
- **Limits metal vaporization risk** compared with very high-temperature slagging gasifiers

Higher syngas yield

**Lower energy consumption;
Higher operation uptime**

Higher reliability

2 Dry coal feed

Handles coal with up to 32% moisture (vs. <5% for conventional dry-feed systems), reducing drying energy requirements and improving operational uptime

- **Dry feed eliminates environmental and reliability challenges of slurry-feed systems.**
- Eliminating slurry-feed **increases efficiency**, supports more **stable gasifier operation and higher availability**
- TRIG™'s PDAC dry-feed system **can accommodate more coarse coal particles than other dry feed systems**, reducing grinding energy costs; PDAC is reliable feature (close to 100% uptime)

Higher operational uptime

Higher operational uptime

Lower energy consumption

3 Dry ash removal

TRIG™ **combines candle-filter particulate removal with no-moving-parts ash extraction**, improving reliability and reducing maintenance requirements.

- Candle filters **reduce particulate matter in syngas to non-detectable levels**
- CFAD and CCAD systems remove bulk filtered ash through dry depressurization, **avoiding molten ash handling and associated environmental challenges**
- No-moving-parts ash removal helps **address a key reliability challenge** in pressurized fine-particulate removal; TRIG™ also demonstrated high uptime of CFAD and CCAD systems for **higher operation reliability**

Less syngas treatment

Higher operational uptime

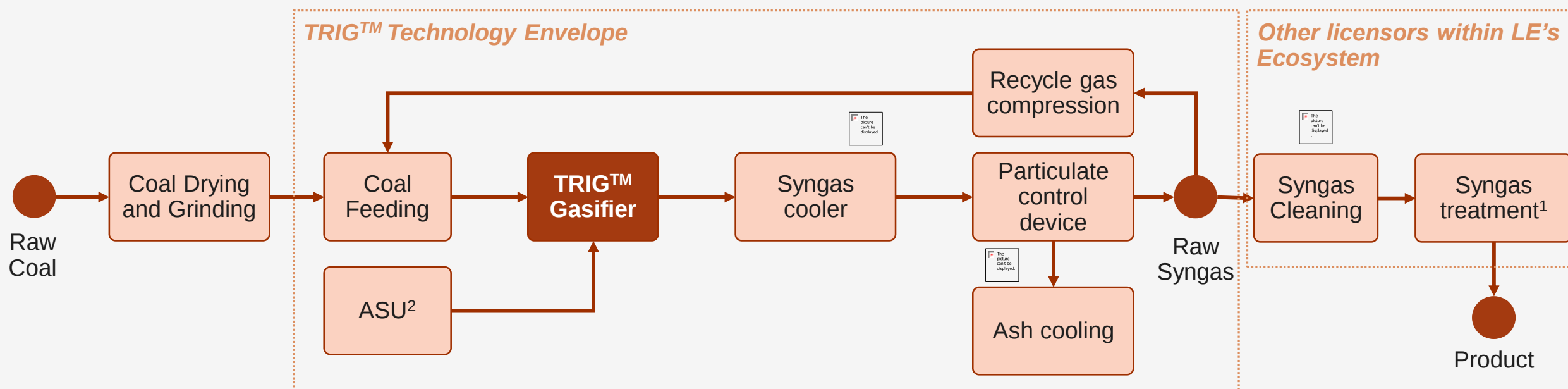
**Higher reliability;
operational uptime**

Higher syngas yield, Lower energy consumption, Less syngas treatment, Higher operational uptime → Lower production costs

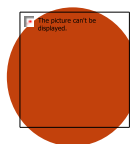
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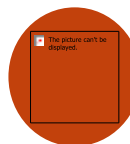


i Feedstock Advantage



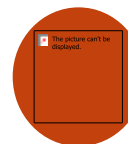
- Capable of handling low rank coal
- High single train capacity

ii High Energy Efficiency



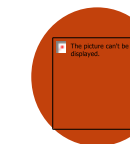
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iii Low Environmental Footprint



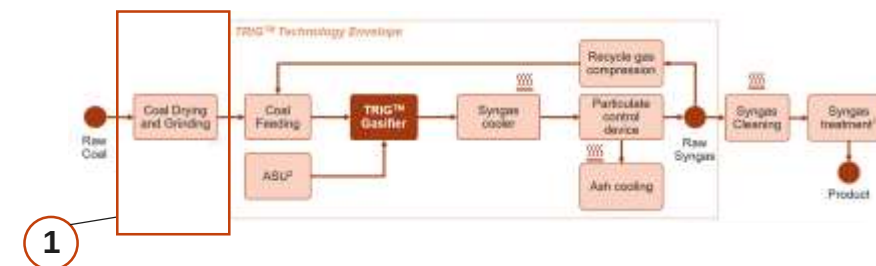
- Dry feed eliminates slurry feed water treatment
- Candle filter removes particulates from syngas
- Dry ash removal removes gray water from slag quench systems.

iv Reliable Operation



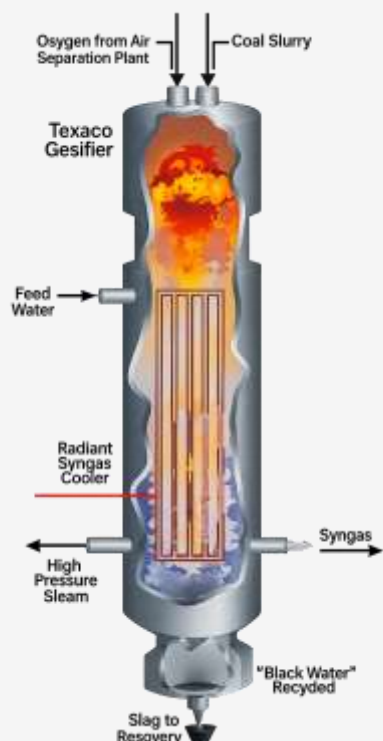
- No burner wear
- No moving parts in feed systems, gasifier or ash removal systems.
- Mild temperatures extend refractory life.

1. TRIG™'s PDAC™ dry feed system can reduce drying and slurry-feed penalties for suitable low-rank coals



COMPLEX

SIMPLE



Conventional Dry Feed Systems

Ultra-fine grinding required (~50 μ)

Coal drying to <5% moisture

High drying energy penalties

Slurry feed pump erosion & downtime

Reduced efficiency

Higher operating costs and downtime

Particle Size

Moisture Handling

Drying Energy

Feed System Reliability

Efficiency

Operating Cost & OPEX

TRIG™ Patented Dry Coal Feed System (PDAC™)

Accepts larger coal particles (~400-500 μ)

US basis: ~30% moisture fed and dried during grinding; higher-moisture India feed needs assay-led drying design*

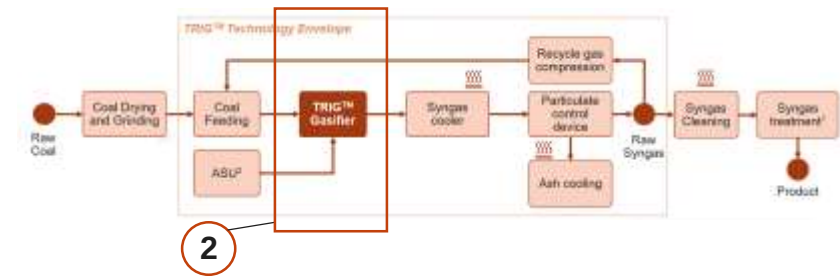
Only limited supplemental drying required for higher-moisture coal

Patented fluidization-based dry coal feed system (PDAC™): no slurry, no eroding pumps

Designed to improve efficiency for suitable low-rank coals

Can reduce drying energy, downtime and operating cost where feed fits the envelope

2. TRIG™'s fluidized-bed gasifier is designed to improve syngas yield while limiting ash and wastewater penalties



COMPLEX

SIMPLE

Conventional Gasifier Systems

Low-rank coals generate uncracked tars and oils that contaminate syngas

Higher gas cleanup and wastewater treatment costs

Longer residence times required for carbon conversion

High temperatures melt coal ash and create slag

Ash melting increases coal consumption and oxygen demand

Larger ASU requirements increase capex and opex

Syngas Quality

Cleanup & Wastewater

Carbon Conversion

Ash / Slag Handling

Oxygen Demand

Capital & OPEX

TRIG™ Optimized Fluidized Bed Gasifier

Tars and oils converted into clean syngas for lower downstream cleanup requirements

Dry ash extraction avoids slag formation and minimizes wastewater generation

US basis: ~98-99% carbon conversion on sub-bituminous / lignite references; India performance set by assay and guarantee*

Moderate-temperature operation prevents slag formation; dry ash handling

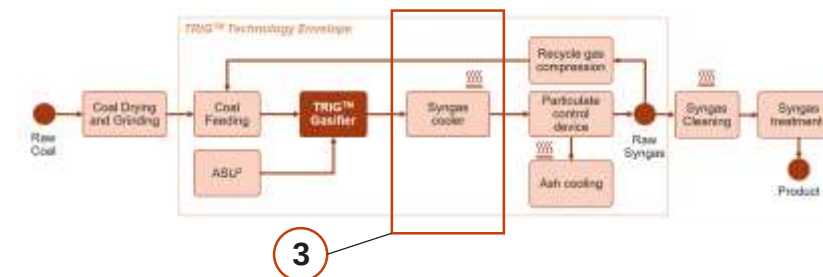
Lower oxygen demand reduces ASU size and power consumption

Can reduce ASU requirements and operating cost where the feed and process design fit the envelope

Contaminated syngas

Contaminated wastewater

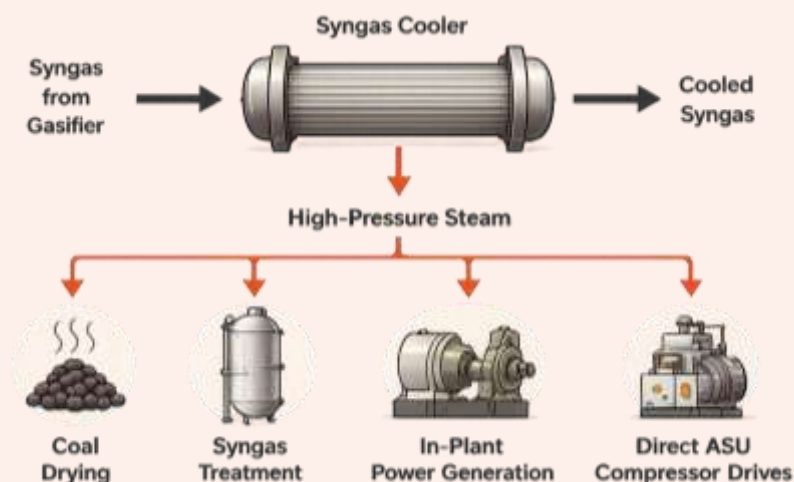
3. TRIG™ heat recovery can improve energy efficiency where the plant heat balance supports integration



TRIG™ Differentiation

A. Steam Recovery & Power Integration

- High-quality syngas cooling generates large volumes of high-pressure steam
- **Steam reused** across gasification and downstream process systems
- Steam can support:
 - Coal drying
 - Syngas treatment
 - In-plant power generation
 - Direct ASU compressor drives



B. Integrated Heat Engineering

- Integrated heat engineering provides multiple methods for managing and recovering process heat
- Flexible heat integration across gasification and downstream chemical production
- Optimized heat recovery across upstream and downstream units
- Enables optimization between capex and opex

TRIG™ Value



Potential ASU operating-cost savings



Lower plant-wide Opex where heat integration fits



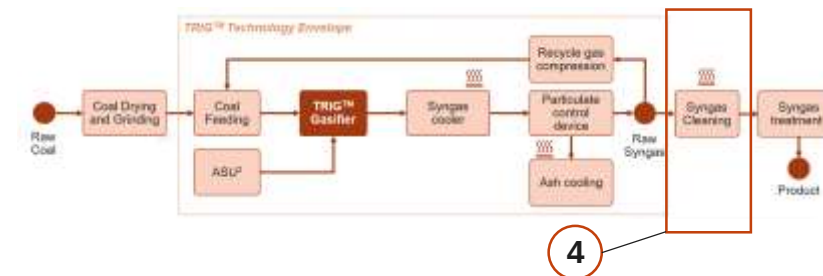
Improved process efficiency and economics



Flexibility for downstream applications

TRIG™ heat recovery can improve energy utilization & reduce purchased power requirements where downstream integration supports it

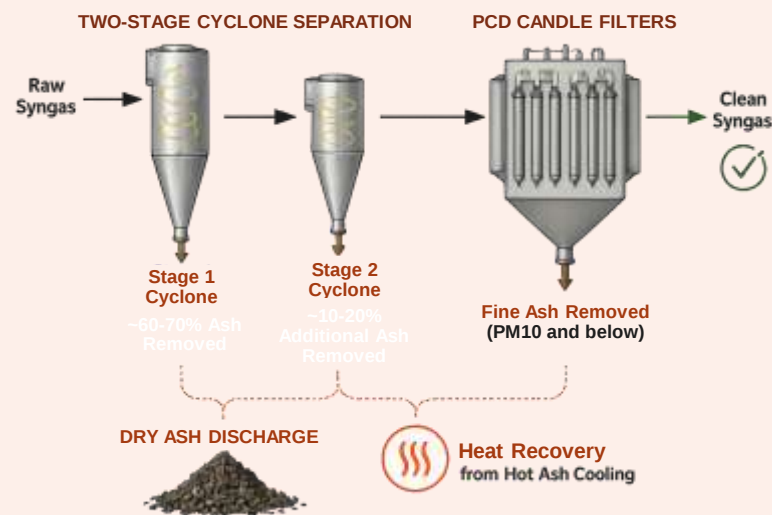
4. TRIG™ continuous ash removal can support high-throughput operation for suitable high-ash feeds



TRIG™ Differentiation

Continuous Ash Removal & Syngas Cleaning

- **Two-stage cyclone separation** removes ~80% of ash from syngas
- Remaining fine ash removed through candle filters in the Particulate Collection Device (PCD)
- Continuous Coarse Ash Depressurization (CCAD™) and Continuous Fine Ash Depressurization (CFAD™) systems enable continuous ash removal
- **No moving parts in ash depressurization systems**
- Dry ash removal avoids slag handling and contaminated wastewater
- **Heat recovery from hot ash cooling improves efficiency**



TRIG™ Value

Continuous cooling, depressurization and discharge of ash supports high-throughput operation with lower ash-handling complexity.



TRIG™ ash handling is designed to improve syngas quality while reducing operational downtime and wastewater generation.

Operational Advantages



Dry ash removal with no slag handling



Continuous high-throughput ash removal



No contaminated ash-quench wastewater



High-quality syngas with minimal tar/oil carryover

Kemper County Project: TRIG™ technology worked however, the Integrated Gasification Combined Cycle (IGCC) business case did not

Learnings from Kemper TRIG™ deployment – Successful technology performance, however right business model required

Technology Validation

TRIG™ components performed as designed

- Developed and piloted at PSDF¹ - 20,000 hours pilot across multiple coal types
- Scale-up proven at Kemper County facility², with ~98–99% conversion and integrated carbon capture of up to 65%
- Gasified over 680,000 tons of Mississippi lignite validating scale-up ability
- Component subsystems operated reliably: dry coal feed, fluid-bed dryer, gasifier (99% uptime), ash depressurization, candle filter
- Public DOE Final Design Report³ documents engineering basis in detail

Project Outcome

Kemper was cancelled due to adverse project economic evolution

- Project execution
 - Cost and time overrun in construction and commissioning due to evolving Carbon Capture mandate during development (from 0 to 25% to 50% to 65%)
- Project economics
 - Carbon capture mandate increased projected CAPEX
 - Significant decline in U.S. natural gas prices due to shale revolution materially weakened IGCC-vs-CCGT economic case (40% reduction from 2010 to 2017)

However, Kemper's cost, timeline, and outcomes is not applicable to India context

1

No carbon-capture mandate

Kemper carried a 65% CCS scope; chemicals projects do not, removing roughly a third of capex and integration complexity

2

Learning costs already absorbed

DOE, Southern Company, and KBR funded the engineering and commissioning learning curve

3

Established EPC and licensing wrap

Potential KBR engineering wrap with potential proven downstream partners (Linde, Toyo, Hyundai)



Ash, water and CO₂ are the approval-critical issues which must be resolved before FID

High-ash Indian coal requires residue, water and carbon handling - central to regulatory permissions

Source: NITI Aayog high-ash workshop, Sep 2025; CIMFR coal-quality characterisations; Ash, water and CO₂ balances confirmed in feasibility.

Ash management

30-45% ash raises throughput and disposal load. TRIG™ dry ash removal avoids molten-slag handling.

Requires an ash-utilisation route (cement, bricks, road base or mine-void filling)

Water balance

Dry feed avoids slurry water and black-water treatment. Water demand still spans coal preparation, ASU, gas cleanup and cooling.

a site-specific balance is confirmed in feasibility, not claimed upfront.

CO₂ disposition

Design for capture-ready configuration. Use cases: urea synthesis, methanol, mineralization or industrial sale

CCUS optionality

Residue and by-products

Sulphur recovery, wastewater minimization and by-product monetization reduce disposal cost and strengthen the permitting case. Each stream needs a defined route before FID.

TRIG's dry-ash, dry-feed design reduces two of the four burdens; ash utilization, water sourcing and CO₂ route remain project-specific items

1. Introduction to Latitude Energy
2. **Latitude Energy's differentiated value proposition**
 - TRIG™ technology: Introduction, key benefits, and deployment
 - **End-to-end solution suite with defined implementation roadmap**

TRIG offers a flexible pathway for India's funded coal-to-gas RFP window

TRIG has a strong India and Indian coal assay fit

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TECHNOLOGY FIT FOR FEEDSTOCK

Dry-feed, non-slagging fluidized-bed design is advantaged for high-ash, low-rank and high-moisture coal/lignite where assay is inside envelope.

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BANKABLE DEVELOPMENT

Technology tie-up, EPC, coal linkage, clearances and offtake to be developed before bidding into the competitive RFP.

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VALIDATION REQUIRED

Kemper and PSDF provide TRIG™ references.
India coal warranties, cost and performance are confirmed by project-specific feasibility.



Powering India's coal gasification ambitions through flexible partnerships and integrated capabilities

Partner with us to create competitive and bankable coal-to-gas projects in India

LATITUDE'S VALUE PROPOSITION



Target economics: competitive delivered product cost benchmarked to the client's fuel/product market cost parities - to be validated in feasibility.



Make in India / DPIIT local-content maximization: Latitude Energy will maximize Indian local content across the EPC and O&M lifecycle and build local capability, positioning India as a base for expansion across Asia

WHAT WE NEED



Predictable, benchmarked product pricing



Consistent coal supply and competitive coal pricing



Predictable terms for FID

FLEXIBLE COMMERCIAL MODELS

We adapt to your goals, risk appetite and capital strategy



Technology Licensor

License LE's proprietary gasification technology & engineering services to develop & operate your downstream asset



BOT

(Build-Operate-Transfer)

LE builds and operates the asset during the agreed contract period before transferring operations to you



BOOT

(Build-Own-Operate-Transfer)

Partner with LE through a long-term ownership & operating structure aligned to project economics



JV

(Joint Venture)

Form a jointly owned partnership with LE to develop and operate downstream coal conversion projects



Self-Owned

(Private Ownership)

Long-term supply partnership while asset is financed, owned, and operated by LE



We are flexible to structure the right arrangement to align risk, return, and control with your objectives

COMPLETE SUITE OF CAPABILITIES

End-to-end capabilities that can be tailored for a commercial model



TECHNOLOGY

- Proprietary coal gasification technology
- Process design & engineering packages
- Technical specifications for consumables & critical equipment
- On-site technical support & troubleshooting



EPC + COMMISSIONING

- FEED studies and engineering integration support
- Lump-sum turnkey EPC coordination
- Construction, integration, and commissioning support
- EPC contractor management



OPERATIONS & MAINTENANCE

- Cost-competitive O&M services
- Post-commissioning support & operator handover
- Specialist maintenance and technical services
- Spares, waste management, and equipment maintenance support



FINANCING ENABLEMENT

- Support for both equity participation and debt financing
- Coordination with banks, SOEs, and strategic stakeholders
- Potential access to U.S.-linked financing avenues, to be tested alongside other financing routes



Thank you

Chief Executive Officer

Jacob Thomas
jacob.thomas@latitude.energy

Chief Operating Officer

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